
Space Weather Forecast

Issued on Sunday 29 September 2024 at 13:14 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Moderate-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity is Low with a couple of long-period Common-class flares observed. There are nine sunspot regions visible, with the most complex of these being a region near the southeast limb. This includes a small spot with opposite polarities within it (a "delta-spot") which can be a sign of increased instability and potential flare activity. However the region remains relatively small and ragged looking. A region, located in the south-centre disc, is an unusual one, consisting of a large number of spots of one magnetic polarity, but very few opposite polarity ones. This region also remains relatively inactive. Spot regions elsewhere on the disc are currently fairly small and stable.

A coronal mass ejection (CME) was observed off the southwest limb in association with one of the Common-class flares mentioned above, with analysis underway to determine any Earth-directed component.

Solar Wind / Geomagnetic Activity: Waning effects of a glancing CME on 28 Sep continue, with wind speeds at background, varying between 300-350km/s. Interplanetary Magnetic Field was Weak to Moderate. The north-south component was variable, but did have some extended negative (southward) intervals. Geomagnetic activity was Quiet to Unsettled (Kp1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of further isolated Moderate class flares. There is a very slight chance of a Strong flare from AR3842.

Solar Wind / Geomagnetic Activity: There are no Earth directed CMEs in the forecast. Background solar winds are expected until a possible weak enhancement occurs, from the faster solar winds from a coronal hole. Slightly elevated solar winds expected., most likely day 1-2 (29-30 Sep), before easing back to background slow wind conditions. Mainly Quiet (Kp 0-2) geomagnetic conditions are expected, but with a spell of Unsettled to Active (Kp 3-4) possible from any faster solar winds day 1-2 (29-30 Sep).

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels, with no solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	No	50	50	50	50
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						